QUICK REVIEW 4.2 *(For help, go to Sections P.2 and 1.7.)*

In Exercises 1–4, use the Pythagorean theorem to solve for x.

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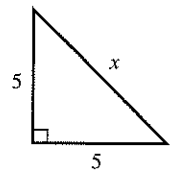

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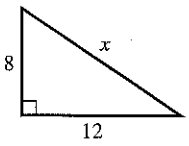

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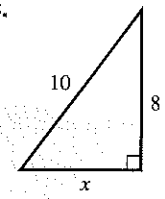

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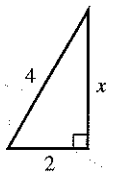

In Exercises 5 and 6, convert units.

5. 8.4 ft to inches

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In Exercises 7–10, solve the equation. State the correct unit.

7. $0.388 = \dfrac{a}{20.4 \text{ km}}$

8. $1.72 = \dfrac{23.9 \text{ ft}}{b}$

9. $\dfrac{2.4 \text{ in.}}{31.6 \text{ in.}} = \dfrac{a}{13.3}$

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SECTION 4.2 EXERCISES

In Exercises 1–8, find the values of all six trigonometric functions of the angle θ.

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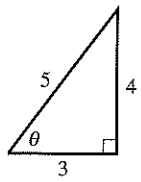

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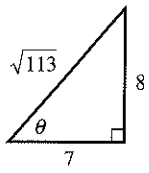

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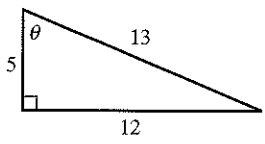

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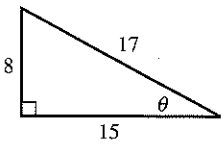

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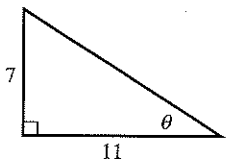

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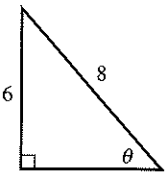

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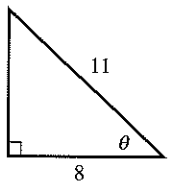

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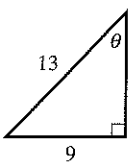

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18. $\sec\theta = \dfrac{17}{5}$

In Exercises 19–24, evaluate *without* using a calculator.

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20. $\tan\left(\dfrac{\pi}{4}\right)$

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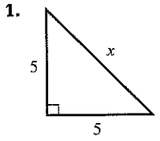

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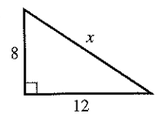

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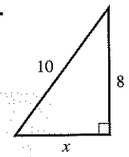

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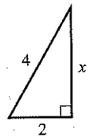

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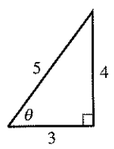

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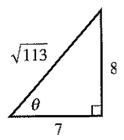

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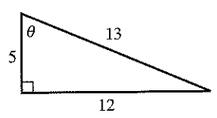

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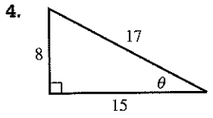

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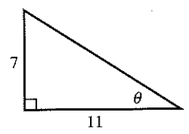

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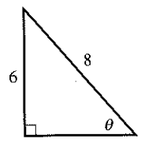

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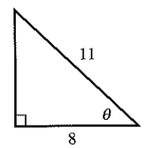

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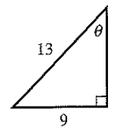

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25. sec 45°

26. sin 60°

27. $\csc\left(\dfrac{\pi}{3}\right)$

28. $\tan\left(\dfrac{\pi}{3}\right)$

In Exercises 29–40, evaluate using a calculator. Be sure the calculator is in the correct mode. Give answers correct to three decimal places.

29. sin 74°

30. tan 8°

31. cos 19°23′

32. tan 23°42′

33. $\tan\left(\dfrac{\pi}{12}\right)$

34. $\sin\left(\dfrac{\pi}{15}\right)$

35. sec 49°

36. csc 19°

37. cot 0.89

38. sec 1.24

39. $\cot\left(\dfrac{\pi}{8}\right)$

40. $\csc\left(\dfrac{\pi}{10}\right)$

In Exercises 41–48, find the acute angle θ that satisfies the given equation. Give θ in both degrees and radians. You should do these problems without a calculator.

41. $\sin\theta = \dfrac{1}{2}$

42. $\sin\theta = \dfrac{\sqrt{3}}{2}$

43. $\cot\theta = \dfrac{1}{\sqrt{3}}$

44. $\cos\theta = \dfrac{\sqrt{2}}{2}$

45. $\sec\theta = 2$

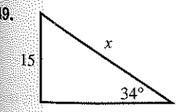
46. $\cot\theta = 1$

47. $\tan\theta = \dfrac{\sqrt{3}}{3}$

48. $\cos\theta = \dfrac{\sqrt{3}}{2}$

In Exercises 49–54, solve for the variable shown.

49.



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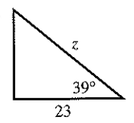
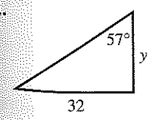


51.



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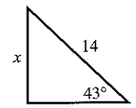

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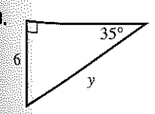

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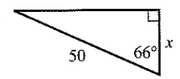
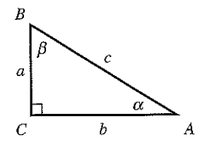


In Exercises 55–58, solve the right $\triangle ABC$ for all of its unknown parts.



55. $\alpha = 20°$; $a = 12.3$

56. $\alpha = 41°$; $c = 10$

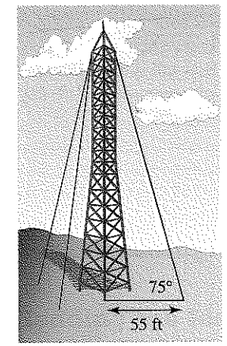
57. $\beta = 55°$; $a = 15.58$

58. $a = 5$; $\beta = 59°$

59. Writing to Learn What is $\lim_{\theta \to 0} \sin\theta$? Explain your answer in terms of right triangles in which θ gets smaller and smaller.

60. Writing to Learn What is $\lim_{\theta \to 0} \cos\theta$? Explain your answer in terms of right triangles in which θ gets smaller and smaller.

61. Height A guy wire from the top of the transmission tower at WJBC forms a 75° angle with the ground at a 55-foot distance from the base of the tower. How tall is the tower?



62. Height Kirsten places her surveyor's telescope on the top of a tripod 5 feet above the ground. She measures an 8° elevation above the horizontal to the top of a tree that is 120 feet away. How tall is the tree?